

Amendments to the Claims

1. *(Currently Amended)* A non-volatile memory device ~~(30)~~ comprising an organic ambipolar semiconductor layer ~~(19)~~ and an organic ferroelectric layer ~~(14)~~, said organic ambipolar semiconductor layer ~~(19)~~ and said organic ferroelectric layer ~~(14)~~ being at least partially in contact with each other.
2. *(Currently Amended)* A non-volatile memory device ~~(30)~~ according to claim 1, furthermore comprising a control electrode ~~(13)~~ being formed in a first conductive layer.
3. *(Currently Amended)* A non-volatile memory device ~~(30)~~ according to claim 2, the control electrode ~~(13)~~ being separated from said organic ambipolar semiconductor layer ~~(19)~~ by said organic ferroelectric layer ~~(14)~~.
4. *(Currently Amended)* A non-volatile memory device ~~(30)~~ according to claim 2, furthermore comprising a first main electrode ~~(17)~~ and a second main electrode ~~(18)~~ being formed in a second conductive layer, said first ~~(17)~~ and said second ~~(18)~~ main electrode being separated from each other by material of the organic ambipolar semiconductor layer ~~(19)~~, and said first ~~(17)~~ and said second ~~(18)~~ main electrode being separated from said control electrode ~~(13)~~ by said organic ferroelectric layer ~~(14)~~.
5. *(Currently Amended)* A non-volatile memory device ~~(30)~~ according to claim 1, wherein the first conductive layer is a conductive polymer layer.
6. *(Currently Amended)* A non-volatile memory device ~~(30)~~ according to claim 5, wherein the conductive polymer layer is a PEDOT/PSS layer or a PANI layer.
7. *(Currently Amended)* A non-volatile memory device ~~(30)~~ according to any of claims 1, wherein the second conductive layer is a conductive polymer layer.

8. *(Currently Amended)* A non-volatile memory device ~~(30)~~ according to claim 7, wherein the conductive polymer layer is a PEDOT/PSS layer or a PANI layer.

9. *(Currently Amended)* A non-volatile memory device ~~(30)~~ according to claim 1, wherein the organic ferroelectric layer ~~(14)~~ is a ferroelectric polymer or oligomer layer.

10. *(Currently Amended)* A non-volatile memory device ~~(30)~~ according to claim 9, wherein the ferroelectric polymer or oligomer layer ~~(14)~~ is a layer comprising material selected from: $(\text{CH}_2\text{-CF}_2)_n$, $(\text{CHF-CF}_2)_n$, $(\text{CF}_2\text{-CF}_2)_n$ or combinations thereof to form (random) copolymers like : $(\text{CH}_2\text{-CF}_2)_n\text{-(CHF-CF}_2)_m$ or $(\text{CH}_2\text{-CF}_2)_n\text{-(CF}_2\text{-CF}_2)_m$.

11. *(Currently Amended)* A non-volatile memory device ~~(30)~~ according to claim 1, wherein the organic ambipolar semiconductor layer ~~(19)~~ comprises a mixture of an n-type and a p-type semiconductor material.

12. *(Currently Amended)* A non-volatile memory device ~~(30)~~ according to claim 11, wherein the organic ambipolar semiconductor layer ~~(19)~~ comprises a mixture of [6,6]-phenyl C61 butyric acid methyl ester and poly[2-methoxy,5-(3,7) dimethyl-octyloxy]-p-phenylene vinylene.

13. *(Currently Amended)* A non-volatile memory device ~~(30)~~ according to claim 1, wherein the organic ambipolar semiconductor layer ~~(19)~~ comprises a single organic material.

14. *(Currently Amended)* A non-volatile memory device ~~(30)~~ according to claim 13, wherein the single organic material is poly(3,9-di-tert-butylindeno[1,2-b] fluorene).

15. *(Currently Amended)* A non-volatile memory device ~~(30)~~ according to claim 1, the memory device ~~(30)~~ comprising a memory window, whereby said memory window depends on the ratio of electron current and hole current.

16. *(Currently Amended)* A non-volatile memory device ~~(30)~~ according to claim 1, whereby said ration of electron current and hole current is close to 0 or close to 1.

17. *(Currently Amended)* A method for processing a non-volatile memory device ~~(30)~~, the method comprising: forming an organic ferroelectric layer ~~(14)~~ and forming an organic ambipolar semiconductor layer ~~(19)~~, said organic ambipolar semiconductor layer ~~(19)~~ and said organic ferroelectric layer ~~(14)~~ being at least partially in contact with each other.